Catalysis by Design

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Abstract

Catalyst development has evolved from being a highly empirical form "black-art" to an interdisciplinary science that bridges chemistry and engineering. Starting from first principles and applying novel synthesis and treatment techniques, it is now possible to formulate and prepare a catalyst to have desired molecular-scale properties. Catalysis through molecular engineering can offer solutions to many of the problems involved in coal utilization, combustion and emission control.

Current research work includes catalysis for reduction and decomposition of nitrogen oxides and reduction of sulfur dioxide. This work has immediate utility to the cost-effective control of power plant emissions. Other research work involves removal of heteroatoms from petroleum and coal derivatives.